AMENDMENTS TO THE CLAIMS

The listing of claims will replace all prior versions and listings of claims in the application:

1. **(Currently Amended)** A system for visualizing conductivity and current density distributions comprising:

a plurality of current injecting devices for injecting currents into a ~~measuring~~ measured object;

an MRI scanner for measuring one directional component of a magnetic flux density due to each of the currents injected into ~~a measuring~~ the measured object;

an operating part for controlling the current injecting devices so as to inject currents of different directions into the ~~measuring~~ measured object, and calculating a conductivity distribution and a current density distribution inside of the ~~measuring~~ measured object by using the one directional component of a magnetic flux density wherein the operating part calculates an inside voltage and a surface voltage of the measured object for a discretionary conductivity, and calculates the conductivity distribution by using the calculated inside voltage and the one directional component of the magnetic flux density; and

displaying means for visualizing the conductivity distribution and current density distributions calculated by the operating part.

2. **(Original)** The system as claimed in claim 1, wherein the current injecting device includes;

an electrode,

an insulating container with the electrode attached to one side, the insulating container having an electrolyte substance, and

a wire for supplying the current to the electrode.

3. **(Currently Amended)** The system as claimed in claim 1, wherein the operating part controls the current injecting devices such that one pair of the current injecting devices are selected in succession, and the selected pair of the current injecting devices supply the current to the ~~measuring~~ measured object.

4. **(Canceled)**

5. **(Currently Amended)** The system as claimed in claim [[4]] 1, wherein the operating part multiplies or divides a constant to the ~~second~~ conductivity distribution according to a ratio of [[a]] the calculated surface voltage to a measured surface voltage.

6. **(Currently Amended)** The system as claimed in claim [[4]] 1, wherein, if an absolute value of a difference of the ~~first~~ discretionary conductivity and the ~~second~~ conductivity distribution is greater than a preset value, the operating part calculates ~~the~~ a inside voltage and ~~the~~ a surface voltage for the ~~second~~ conductivity distribution, and calculates a ~~third~~ new conductivity distribution by using the inside voltage for the second conductivity and the one directional component of the magnetic flux density.

7. **(Currently Amended)** The system as claimed in claim [[4]] 1, wherein the operating part determines that the ~~second~~ conductivity distribution is a true conductivity, if the absolute value of the difference of the ~~first~~ discretionary conductivity and the ~~second~~ conductivity distribution is smaller than the present value.

8. **(Currently Amended)** The system as claimed in claim [[4]] 1, wherein the operating part substitutes the inside voltage and the one direction component of the magnetic flux density into the following equation, and subjects the equation to a line integral, to obtain the ~~second~~ conductivity distribution.

$$\frac{1}{\mu_0}\begin{bmatrix} V^1 B_z^1 \\ \vdots \\ V^1 B_x^N \end{bmatrix} = \begin{bmatrix} \frac{\partial V^1}{\partial y} & -\frac{\partial V^1}{\partial x} \\ \vdots & \vdots \\ \frac{\partial V^N}{\partial y} & -\frac{\partial V^N}{\partial x} \end{bmatrix} \begin{bmatrix} \frac{\partial \sigma}{\partial x} \\ \frac{\partial \sigma}{\partial y} \end{bmatrix}$$

Where, μ_o denotes a magnetic permeability of the free space.

9. **(Currently Amended)** The system as claimed in claim [[4]] 1, wherein the operating part substitutes the inside voltage and the one directional component of the magnetic flux density into the following equation, and solves the equation by layer potential method, to obtain the ~~second~~ conductivity distribution.

$$\frac{1}{\mu_0}\begin{bmatrix} V^1 B_z^1 \\ \vdots \\ V^1 B_x^N \end{bmatrix} = \begin{bmatrix} \frac{\partial V^1}{\partial y} & -\frac{\partial V^1}{\partial x} \\ \vdots & \vdots \\ \frac{\partial V^N}{\partial y} & -\frac{\partial V^N}{\partial x} \end{bmatrix} \begin{bmatrix} \frac{\partial \sigma}{\partial x} \\ \frac{\partial \sigma}{\partial y} \end{bmatrix}$$

Where, μ_o denotes a magnetic permeability of the free space.

10-20. **(Canceled)**